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Boloponera vicans gen.n. and sp.n. and two new species of the *Plectroctena* genus group (Hymenoptera: Formicidae)

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Abstract

The Afrotropical ponerine ant genus *Boloponera* gen.n. and the following species are newly described: *Boloponera vicans* sp.n., *Loboponera nobileae* sp.n., and *Plectroctena thaui* sp.n. An analysis of petiole structure within the Ponerini reveals that *Dolioponera* BROWN, 1974 and *Boloponera* gen.n. are outside the *Plectroctena* genus group.

Key words: Formicidae, Afrotropical, Central African Republic, Gabon, Cameroon.

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Introduction

Recent leaf litter ant inventories in the Congo Basin region (Cameroon in 2000, Central African Republic in 2001, and Gabon in 1998, and 2000) have provided a wealth of new material from a region that includes the richest ant diversity in Africa (FISHER 2004). These inventories included over 1,050 leaf litter samples from coastal and interior wet forest habitats. Despite this extensive collection effort, many taxa, such as those described below, are known from single or few specimens. The frequency with which novel specimens are being found suggests that our knowledge of this region's soil and litter fauna is far from complete. Future collecting is sure to uncover many new insights into ant evolution and diversity.

Among the novel ant specimens collected in these inventories is one small group of related Afrotropical ponerine ants. In this paper, I describe and evaluate this related group of species and describe the new genus *Boloponera* and three new species.

BOLTON & BROWN (2002) provided a detailed overview of the Afrotropical *Plectroctena* genus group (*Loboponera* BOLTON & BROWN, 2002, *Plectroctena* F. SMITH, 1858, *Psalidomyrmex* ANDRÉ, 1890) and described the new genus *Loboponera*. They established the following autapomorphic character to define the group: "Anteroventral articulatory surface of petiole long and very broad, the surface with a narrow median V-shaped longitudinal groove or central small pore-like depression." The ant genus *Dolioponera* BROWN, 1974 was considered possibly related but was not included in this analysis because it was known only from the type specimen and not available for dissection.

Since then, the Congo region has yielded additional specimens of *Dolioponera*. This material has provided a chance to dissect *Dolioponera* and evaluate additional morphological characters for the species. In this paper I compare *Dolioponera* to the *Plectroctena* group and demonstrate that BOLTON & BROWN (2002) were correct in placing it outside the *Plectroctena* group. *Boloponera* shares many similarities with the *Plectroctena* group, but like *Dolioponera* is placed outside this group because of the shape of the articulatory surface of the petiole.

Methods

All species and type material examined in this study have been imaged and are available on AntWeb (www.antweb.org). Material was deposited at the California Academy of Sciences, San Francisco (CASC); The Natural History Museum, London (BMNH); and Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts (MCZC).

New specific names in this work are arbitrary combinations of letters, to be treated as nouns and thus invariant. Each specimen discussed below is uniquely identified with a specimen-level code (e.g., CASENT0003099) affixed to each pin. In addition, each specimen includes a collection code, which is a field number that uniquely identifies collecting events (e.g., BLF01652). Collection codes, when available, are associated with a collector and follow the collector's name.

Digital images (Figs. 1 - 24) were created using a JVC KY-F75 digital camera and Syncroscopy Auto-Montage (v 5.0) software. All metric measurements were taken at 80 × power with a Leica MZ APO microscope using an orthogonal pair of micrometers, recorded to the nearest 0.001 mm, and rounded to two decimal places for presentation. When more than one specimen was measured, minimum and maximum are presented for measurements and indices. Measurement indices and their abbreviations in the paper follow those used by BOLTON & BROWN (2002). Abdominal segments are noted by "A" and the segment number, such as A2 for the petiole and A3 for the first gastral segment.

HL Head length: maximum longitudinal length from anteriormost portion of projecting clypeus to midpoint of a line across the posterior margin. Note that HL measurement includes anteriorly projecting frontal lobes and median clypeal process when present.

HW Head width: maximum width of head, excluding eyes.

CI Cephalic index: HW / HL × 100.

SL Scape length: maximum chord length excluding basal condyle and neck.

SI Scape index: SL / HW × 100.

ML Mesosoma length (Weber's length): in lateral view of mesosoma, diagonal length from posteroventral corner of propodeum to the farthest point on anterior face of pronotum, excluding neck.

Figs. 1 - 4: *Boloponera vicans* gen.n., sp.n., worker: holotype CASENT0401737.

TL Total length: sum of HL + ML + length of segments A2 to the last visible abdominal segment, usually pygidium. A2 to apex measured as followed: maximum length in lateral view of A2, A3 and A4 each measured separately + A5 to apex measured together.

Taxonomic synopsis

***Boloponera* gen.n.** (Figs. 1 - 4, 24)

The gender of the genus name *Boloponera* is feminine.

Type-species. *Boloponera vicans* sp.n., present designation.

Worker. Ponerinae ant with the characters of the Ponerini tribe listed in BOLTON (2003) and also with the following:

1. Median portion of clypeus not extended anteriorly as a lobe that projects out over the mandibular basal margins.

2. Frontal lobes extend anteriorly and project out over the mandibular basal margins.

3. Labrum not visible in full-face view with mandibles closed.

4. Mandible linear, without large semicircular excavation in clypeal margin at mandibular articulation.

5. Postventral curve of head in profile without projecting curved flange.

6. Propodeal dorsum without median longitudinal groove or impression.

7. Metafemur with longitudinal (glandular) groove present along entire length.

8. A4 tergite tubular, not strongly arched and downcurved.

9. Anteroventral process on the A3 sternite present, but greatly reduced.

10. Anteriormost part of ventral surface of petiole (Fig. 24) with broadly horseshoe-shaped strip of cuticle.

11. Antennae 12-segmented.

Queen and male. Unknown.

Comments. *Boloponera* gen.n. is reminiscent of *Plectroctena*. Both taxa have: (1) linear mandibles, (2) frontal lobes that project over mandible, (3) propodeal lamellae, and (4) metafemur with a longitudinal, possibly glandular groove. However, there are striking differences. The mandible of *Boloponera* lacks the characteristic large semicircular excavation in the clypeal margin at the mandibular articulation. Both taxa have linear mandibles, but *Boloponera* lacks the longitudinal groove on the inner half of the dorsal surface of the mandible blade.

In addition, *Boloponera* lacks the unique shape of the ventral anterior articulatory surface of the petiole found in the *Plectroctena* group. The *Plectroctena* group is characterized by the presence of a V-shaped groove or a narrow median pore-like depression on the anteriormost part of the ventral surface of the petiole (Figs. 25 - 29) (BOLTON & BROWN 2002). In *Boloponera* (Fig. 24), the shape is similar to other Ponerini outside the *Plectroctena* group (see Figs. 21 - 23).

Boloponera differs from the only known *Centromyrmex* MAYR, 1866 with elongate mandibles *C. silvestrii* (SAN-

Figs. 5 - 8: *Loboponera nobileae* sp.n., worker: holotype CASENT0003099.

TSCHI, 1914) by having frontal lobes that extend anteriorly and project out over the mandibular basal margins. In addition, *Boloponera* lacks the strong spines on the middle tibia and middle and hind basitarsi that characterize *Centromyrmex*. *Boloponera* is also superficially similar to *Myopias* ROGER, 1861 but differs in lacking a second tibial spur and a clypeus that projects between the frontal lobes and extends over the basal margin of the mandibles. Based on overall characters, *Boloponera* along with *Dolioponera* may well constitute the sister group of the *Plectroctena* genus group. *Centromyrmex* may also prove to be closely related to the *Plectroctena* genus group.

***Boloponera vicans* sp.n.** (Figs. 1 - 4)

Holotype worker. Central African Republic: Prefecture Sangha-Mbaéré, Parc National Dzanga-Ndoki, Mabéa Bai, 21.4 km 53° NE Bayanga; (03° 02' 00" N, 016° 24' 36" E) 510 m, 1.-7.V.2001, leg. B.L. Fisher, rainforest, sifted litter, B.L. Fisher collection code: BLF04000, specimen code: CASENT0401737, 1 worker (CASC).

Measurements (holotype). TL 3.3, HL 0.79, HW 0.67, CI 85, SL 0.41, SI 62, ML 0.98.

Diagnosis (worker). General form as in Figs. 1 - 4. Inner margin of mandible blade with two small, blunt teeth located in basal half of inner margin. Eyes absent. Posterior margin of head slightly concave. Antenna with two-segmented club. Propodeal declivity bordered on each side by raised lamella that does not extend across dorsum. Femoral grove not visible on mesofemur; metafemur with a longitudinal groove present along entire length. Petiole quadrate in profile; subpetiolar process with posterior projecting acute tooth. Abdomen strongly constricted between A3 and A4.

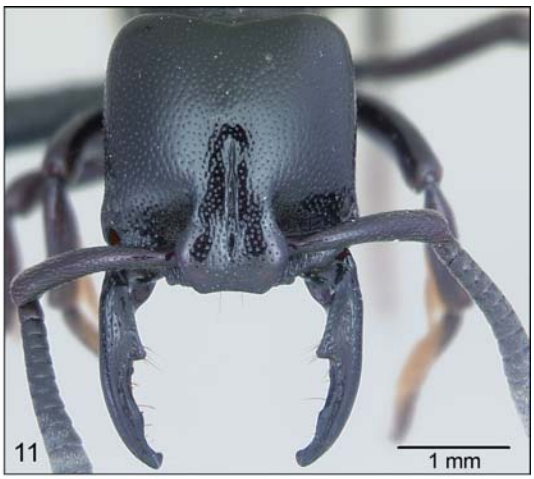
Head, posterior of frontal lobes, densely foveolate punctate; punctures less than one diameter apart and overlaid and separated by reticulate or longitudinal rugae; dorsum of mesosoma with a few shallow punctures, mostly striate. Sides of mesosoma with inconspicuous striae. Propodeal declivity with a few transverse striae but otherwise smooth and highly polished. Petiole with effaced punctures and striae. A3 and A4 with foveolate punctures larger and sparser than on cephalic dorsum; longitudinal rugae present on central dorsum of A3.

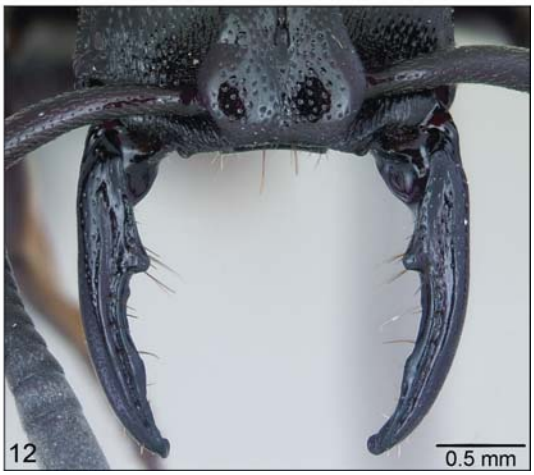
Punctures on dorsum of head and mesosoma each with a small suberect hair arising from center, the hair approximately twice the diameter of the puncture. Longer standing hairs present on metanotum, petiole, A3 and A4.

Comments. This species is currently known from a single specimen from a leaf litter (miniWinkler) sample in the Central African Republic near the border of Gabon, Cameroon, and Congo.

***Loboponera nobileae* sp.n.** (Figs. 5 - 8)

Holotype worker. Gabon: Woleu-Ntem, 31.3 km 108° ESE Minvoul (02° 04' 48" N, 012° 24' 24" E), 600 m, 8.II. 1998, leg. B.L. Fisher, rainforest, ex rotten log, B.L. Fisher collection code: BLF01652, specimen code: CASENT 003099, 1 worker (CASC).





Figs. 9 - 12: *Plectroctena thaui* sp.n., worker: holotype CASENT0003074.

Paratype worker. Central African Republic: Prefecture Sangha-Mbaéré, Réserve Spéciale de Forêt Dense de Dzanga-Sangha, 12.7 km 326° NW Bayanga (03° 00' 18" N, 016° 11' 36" E), 420 m, 10.-17.V.2001, leg. B.L. Fisher, rainforest, sifted litter, B.L. Fisher collection code: BLF4 100, specimen code: CASENT0408696, 1 worker (BMNH).

Diagnosis (worker). Characters of the *L. vigilans* BOLTON & BROWN, 2002 group, specifically: mandible with four teeth between apical tooth and basal angle. Median portion of clypeus, anterior to frontal lobes, with low, longitudinal carina. Propodeal declivity with triangular tooth near base; margin above with small tooth. Sculpture coarse, dense and foveolate on dorsum of head, mesosoma, and A2 - A4. Surfaces of head behind frontal lobes, mesosoma, petiole node, and abdominal segments 2 and 3, with numerous fine suberect hairs arising from the center of each foveolate puncture. Scape with projecting hairs on leading edge.

In addition, the following characters: Maximum eye diameter 0.10 mm. A3 sternite with an anteriorly directed blunt tooth on each side of the anteroventral median process and without a median longitudinal carina. A3 tergite in dorsal view with bluntly rounded anterolateral corner. Propodeal declivity with broad, triangular tooth near base, margin above with another, smaller tooth near apex; dorsum of mesosoma rounds into propodeal declivity. Scape and entire femur and tibia with dense suberect pilosity that is slightly shorter and denser than hairs on cephalic dorsum. Petiole in dorsal view widest posteriorly. All dorsal surfaces of head and body with a combination of longitudinally costate-rugose sculpture or foveolate punctures. Foveolate component less developed on head and propodeum.

Measurements. Holotype: TL 7.5, HL 1.64, HW 1.19, CI 73, SL 1.31, SI 110, ML 2.25. Paratype (one measured): TL 6.5, HL 1.52, HW 1.17, CI 77, SL 1.23, SI 105, ML 2.16. Apart from being smaller in size, the paratype matches the holotype.

Queen and male. Unknown.

Comments. This species is placed within the *L. vigilans* species groups erected by BOLTON & BROWN (2002). It is most similar to *L. subatra* BOLTON & BROWN, 2002 in having a lateral blunt tooth on each site of the anteromedian process of the A3 sternite. It is separate from *L. subatra* by having notably longer and denser pilosity on all dorsal surfaces, and denser costate-rugose sculpture. In *L. nobileae*, the pilosity is distinctly longer than the maximum width of the eye, while in *subatra*, the hair is about the same length as the maximum width of the eye. In *L. subatra*, the sculpture is partially effaced on the dorsum of the propodeum and petiole, while in *L. nobileae*, the sculpture is distinct. *Loboponera subatra* is known from southeastern Cameroon to Central African Republic where it is sympatric with *L. nobileae* in the Dzanga-Sangha and Dzanga-Ndoki region.

Inventories in Gabon, Cameroon, and Central African Republic extended the range of other *Loboponera* which are summarized below. Specimens are currently housed at CASC.

Figs. 13 - 16: *Dolioponera fustigera*, large worker with eyes, CASENT0411307.

***Loboponera basalis* BOLTON & BROWN, 2002**

Gabon: Ogooue-Maritime, Reserve de Faune de la Moukalaba-Dougoua, 10.8 km 214° SW Doussala (02° 25' 22" S, 010° 32' 43" E), 110 m, 29.II.2000, leg. B.L. Fisher, rainforest; Woleu-Ntem, 31.3 km 108° ESE Minvoul (02° 04' 48" N, 012° 24' 24" E), 600 m, 11.II.1998, leg. B.L. Fisher.

***Loboponera politula* BOLTON & BROWN, 2002**

Cameroon: Sud, Bondé Forest, N'kolo village, 27.5 km 155° SSE Elogbatindi (03° 13' 18" N, 010° 14' 48" E), 40 m, 12.IV.2000, leg. B.L. Fisher, rainforest; Parc. National Campo, 43.3 km 108° ESE Campo (02° 16' 57" N, 010° 12' 22" E), 290 m, 7.IV.2000, leg. B.L. Fisher; Reserve de Faune de Campo, 2.16 km 106° ESE Ébodjé (02° 34' 04" N, 009° 50' 40" E), 10 m, 9.IV.2000, leg. B.L. Fisher, littoral rainforest; Sud-Ouest, Bimbia Forest, 7.4 km 119° ESE Limbe (03° 58' 55" N, 009° 15' 45" E), 40 m, 14.IV.2000, leg. B.L. Fisher, rainforest.

***Loboponera subatra* BOLTON & BROWN, 2002**

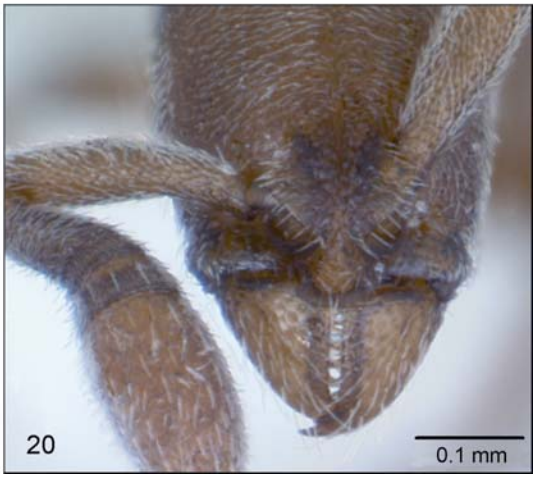
Cameroon: Sud, Reserve de Faune de Campo, Massif des Mamelles, 15.1 km 84° E Ébodjé (02° 35' 39" N, 009° 57' 34" E), 180 m, 4.IV.2000, leg. B.L. Fisher, rainforest; **Central African Republic:** Prefecture Sangha-Mbaéré, Parc National Dzanga-Ndoki, Mabéa Bai, 21.4 km 53° NE Bayanga (03° 02' 00" N, 016° 24' 36" E), 510 m, 1.-7.V. 2001, leg. B.L. Fisher.

***Loboponera trica* BOLTON & BROWN, 2002**

Gabon: Woleu-Ntem, 31.3 km 108° ESE Minvoul (02° 04' 48" N, 012° 24' 24" E), 600 m, rainforest, 11.II.1998 leg. B.L. Fisher; **Democratic Republic of Congo:** Epulu (01° 23' 00" N, 028° 35' 00" E), 750 m, XI.1995, leg. S.D. Torti.

***Loboponera vigilans* BOLTON & BROWN, 2002**

Cameroon: Sud, Parc National de Campo, 43.3 km 108° ESE Campo (02° 16' 57" N, 010° 12' 22" E), 290 m, 7. IV.2000, leg. B.L. Fisher, rainforest; Reserve de Faune de Campo, 2.16 km 106° ESE Ébodjé (02° 34' 04" N, 009° 50' 40" E), 10 m, 9.IV.2000, leg. B.L. Fisher, littoral rainforest; Reserve de Faune de Campo, Massif des Mamelles, 15.1 km 84° E Ébodjé (02° 35' 39" N, 009° 57' 34" E), 180 m, 4.IV.2000, leg. B.L. Fisher, rainforest; Sud-Ouest, Bimbia Forest, 7.4 km 119° ESE Limbe (03° 58' 55" N, 009° 15' 45" E), 40 m, 14.IV.2000, leg. B.L. Fisher; Korup National Park, 6.9 km 317° NW Mundemba (05° 00' 58" N, 008° 51' 50" E), 110 m, 19.IV.2000, leg. B.L. Fisher; **Central African Republic:** Prefecture Sangha-Mbaéré, Parc National Dzanga-Ndoki, 37.9 km 169° S Lidjombo (02° 22' 14" N, 016° 10' 21" E), 360 m, 20.-28.V.2001, leg. B.L. Fisher; Réserve Spéciale de Forêt Dense de Dzanga-Sangha, 12.7 km 326° NW Bayanga (03° 00' 18" N, 016° 11' 36" E), 420 m, 10.-17.V.2001, leg. B.L. Fisher; **Gabon:** Ogooue-Maritime, Reserve de Faune de la Moukalaba-



Figs. 17 - 20: *Dolioponera fustigera*, small worker without eyes, CASENT0000078.

Dougoua, 10.8 km 214° SW Doussala (02° 25' 22" S, 010° 32' 43" E), 110 m, 29.II.2000, leg. B.L. Fisher; Reserve de Faune de la Moukalaba-Dougoua, 12.2 km 305° NW Doussala (02° 19' 00" S, 010° 32' 00" E), 110 m, 3.III.2000, leg. B.L. Fisher; Aire d'Exploit. Rationnelle de Faune des Monts Doudou, 25.2 km 304° NW Doussala (02° 13' 39" S, 010° 23' 40" E), 640 m, 18.III.2000, leg. M. Burger.

***Plectroctena thaui* sp.n.** (Figs. 9 - 12)

Holotype worker. Cameroon: Sud-Ouest, Mount Cameroon, Etinde Forest Reserve, 3.8 km 330° NNW Mapanja (04° 06' 28" N, 009° 09' 07" E), 1440 m, 16.IV.2000, leg. B.L. Fisher, montane rainforest, sifted litter, B.L. Fisher collection code: BLF02326, specimen code: CASENT000 3074, 1 worker (CASC).

Paratype workers. Four workers with same data as holotype but with specimen codes: CASENT0003075 (MCZC), CASENT0003076 (BMNH), CASENT0003077 (CASC), CASENT0003078 (CASC).

Diagnosis (worker). With the following characters of the *P. mandibularis* SMITH, 1858 species group (BOLTON & BROWN 2002). Propodeal lamella restricted to side of propodeal declivity. Mandible with basal tooth, distal tooth slightly raised and at an angle. Dorsum of A3 tergite without anteriorly situated transverse groove or impression. Petiole node in profile slightly higher than long. Head relatively broad (CI 95 - 97).

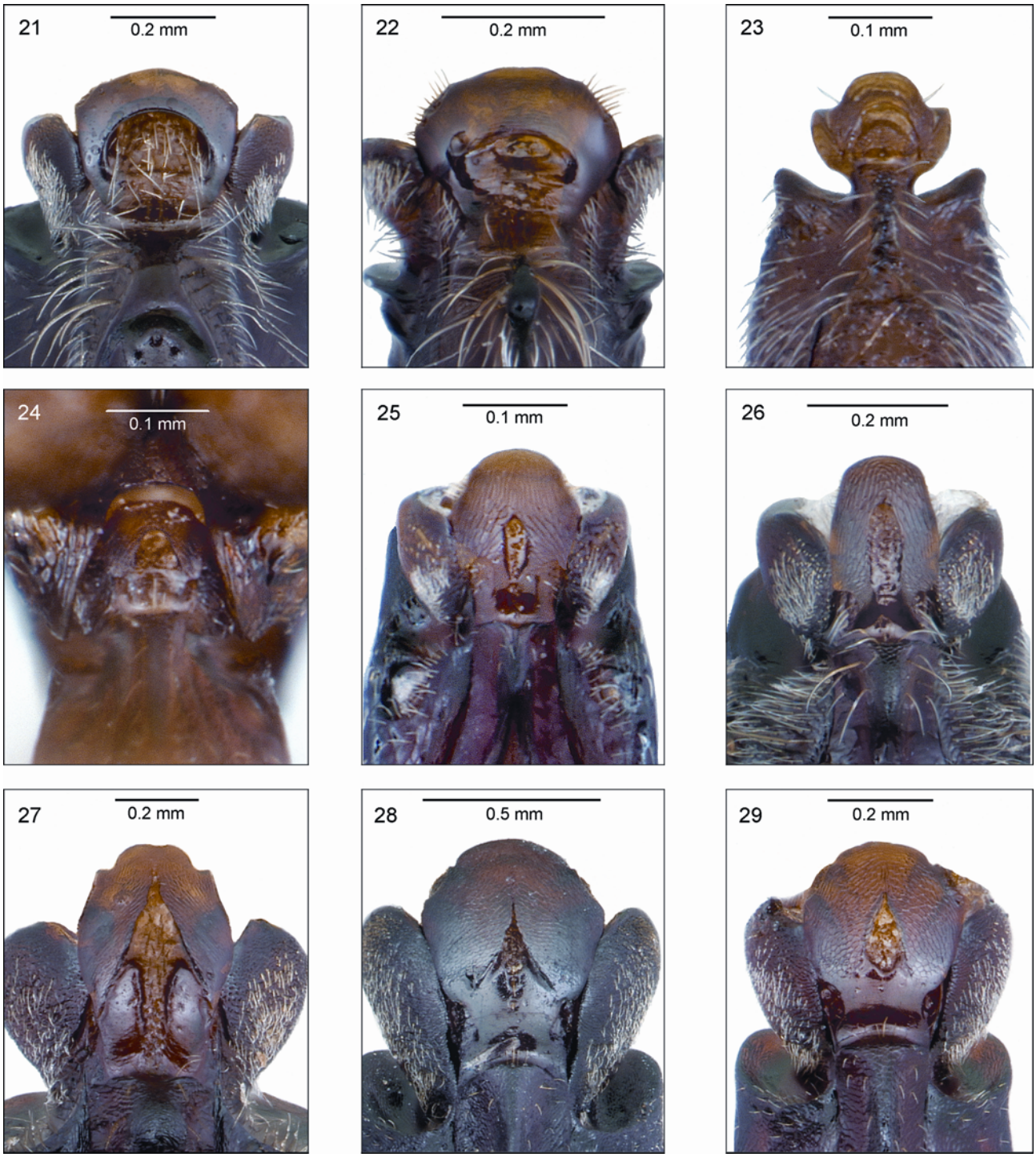
In addition, with the following specific characters: Maximum diameter of eye 0.13 mm. Basal tooth of mandible with a defined vertical anterior surface, and without a defined posterior surface; apex of tooth extends to mandible base as oblique high ridge. Dorsum of head finely sculptured, with small punctures of diameters smaller than the distances between each puncture. Ventral surface of head without striation between punctures, a few longitudinal rugae present posteriorly. Dorsal surfaces of head and mesosoma without erect hairs. Foveolate punctures on dorsum of head with short, mostly erect hairs arising from their centers. Mesonotum and propodeum without polished, unsculptured, median, longitudinal strip. Propodeal lamina narrow, confined to both sides of the declivity, not extending across dorsum, without stout tooth near base.

Measurements. Holotype: TL 9.9, HL 2.45, HW 2.33, CI 95, SL 1.68, SI 72, ML 3.14. Paratypes (three measured): TL 9.9 - 11.0, HL 2.37 - 2.54, HW 2.30 - 2.41, CI 95 - 97, SL 1.56 - 7.76, SI 68 - 73, ML 3.13 - 3.20.

Comments. This species is easily placed within the *P. mandibularis* species group as defined by BOLTON & BROWN (2002), but slightly extends the CI for the group to 86 - 97. Within this group, *P. thaui* is most similar to *P. ugandensis* MENOZZI, 1932 but *P thaui* is notably larger, with the HW 2.33 - 2.54 (*P. ugandensis* HW < 1.75), and black in color (dark red in *P. ugandensis*).

***Dolioponera fustigera* BROWN, 1974** (Figs. 13 - 20, 23)

Dolioponera fustigera BROWN, 1974: 32, figs. 1-4. Holotype worker, Gabon: Plateau forestier d'Impassa, near Makokou, 1966 - 1967, leg. J.A. Barra, berlesate of soil, 0 to



Figs. 21 - 29: Anteroventral articulatory surface of petiole. (21) *Pachycondyla* sp. CR-01, collected from internodes of *Cecropia insignis*, CASENT0007074; (22) *Odontomachus coquereli* ROGER, 1861, CASENT0007073; (23) *Dolioponera fustigera*, CASENT0411307; (24) *Boloponera vicans*, CASENT0401737; (25) *Loboponera politula* BOLTON & BROWN, 2002, CASENT0007075; (26) *Loboponera vigilans* BOLTON & BROWN, 2002, CASENT0009844; (27) *Psalidomyrmex procerus* EMERY, 1901, CASENT0007077; (28) *Plectroctena cristata* EMERY, 1899, CASENT0008616; (29) *Plectroctena minor* EMERY, 1892, CASENT0009845.

5 cm deep on hill spur covered with primary forest; examined (MCZC).

Additional material examined: Cameroon: Sud, Parc National de Campo, 43.3 km 108° ESE Campo (02° 16' 57" N, 010° 12' 22" E), 290 m, 7.IV.2000, leg. B.L. Fisher, rainforest, sifted litter, B.L. Fisher collection code: BLF2298, specimen code: CASENT0000078, 1 worker (CASC); **Central African Republic**: Prefecture Sangha-Mbaéré, Réserve Spéciale de Forêt Dense de Dzanga-Sangha, 12.7 km 326° NW Bayanga (03° 00' 18" N, 016° 11' 36" E), 420 m, 10.-

Tab. 1: Measurements of *Dolioponera fustigera*.

form	Specimen code	TL	HL	HW	CI	SL	SI	ML
without eyes	CASENT0000078	2.2	0.52	0.30	59	0.28	91	0.61
with eyes	CASENT0411307	2.7	0.60	0.41	68	0.37	91	0.76
with eyes	CASENT0412032	2.7	0.60	0.40	67	0.35	88	0.78

17.V.2001, leg. B.L. Fisher, rainforest, sifted litter, B.L. Fisher collection code: BLF4100, specimen codes CASENT 0411307, 1worker, CASENT0412032, 1 worker (CASC).

Measurements. See Tab. 1.

Comments. This species was previously known only from the type specimen. A total of three specimens were collected from leaf litter samples from Cameroon and the Central African Republic. The two specimens in Dzanga-Sangha match the type in size and shape. The specimen from Park National Campo in Cameroon (Figs. 17 - 20), however, is much smaller (HW 2.2) and lacks eyes. I did not observe any additional differences in morphology that would justify describing a new species at this time. The three specimens with large eyes (type specimen and the two specimens from Dzanga-Sangha) may represent ergatoid queens. Ergatoid queens that are similar to workers except for a larger eye and A3 - A4 are known in the Ponerinae (PEETERS & ITO 2001).

One of the specimens from the Central African Republic was dissected to examine palp formula and petiole structure. Dissection of the mouthparts revealed a palp formula 2,2 (maxillary 2 and labial 2 segmented). In species examined, *Loboponera* is also 2,2, while *Plectroctena* is 3,4, 2,3, and 2,2 and *Psalidomyrmex* is 3,4 (BOLTON & BROWN 2002; B.L. Fisher, pers. obs.). The palps were not visible in *Boloponera*.

The articulation of the petiole is similar to *Boloponera vicans* (Fig. 24). Thus, *Dolioponera* has a generalized Ponerini articulatory surface rather than the specialized *Plectroctena* group form. This supports Bolton's placement of *Dolioponera* outside the *Plectroctena* group (BOLTON & BROWN 2002). The similarities in petiole structure point to the possibility that *Dolioponera* and *Boloponera* are sister to the *Plectroctena* group. Additional evidence is needed to evaluate this relationship. Molecular analysis would be a logical approach to test this hypothesis (OUELLETTE & al. in press).

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Zusammenfassung

Die afrotropische ponerine Ameisengattung *Boloponera* gen.n. und die folgenden Arten werden neu beschrieben: *Boloponera vicans* sp.n., *Loboponera nobileae* sp.n. und *Plectroctena thaui* sp.n. Eine Analyse der Petiolusstruktur der Tribus Ponerini ergibt, dass *Dolioponera* BROWN, 1974 und *Boloponera* gen.n. nicht zur *Plectroctena*-Gattungsgruppe gehören.

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